

Submersible Waste Water Pumps

60 Hz



Ama-Drainer® N 301



Ama-Drainer® N 302



Ama-Drainer® N 303

Applications

- Automatic drainage of pits, shafts, yards and cellars subject to a flooding risk
- Lowering the surface water level
- Drainage of underground passages
- Extraction of water from rivers and reservoirs
- General drainage

Fluid Handled

Ama-Drainer® N - Standard design for waste water

Slightly contaminated water, also containing solid particles with a particle size of up to 10 mm.

Ama-Drainer® N C - Design for aggressive water

- Transport of seawater or water containing salt
- Transport of brackish water

Operating Data

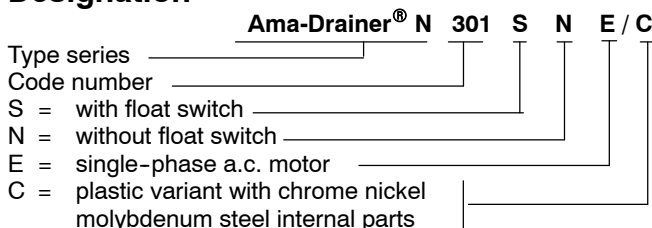
Q up to 14 m³/h, 3.9 l/s

H up to 12 m

t up to 50 °C

Pumps for flow rates up to 130 m³/h and/or heads up to 26 m see Type Series Booklets 2331.51, 2331.53 and 2331.54.??

Designation



Design

Vertical, fully floodable submersible motor pumps in close-coupled design, IP 68, single-stage, with integrated swing check valve.

Pump control by float switch.

External control possible if equipped with 10 m motor lead. Max. immersion depth 2 m.

Bearings

Ama-Drainer® N 301 - 302 - 303

Ball bearings greased for life

Shaft Seal

| Ama-Drainer® N | Impeller end | Motor end |
|----------------|--------------------|-------------------|
| 301/302/303 | 2 shaft seal rings | 1 shaft seal ring |

An oil chamber is fitted in-between the two seals.

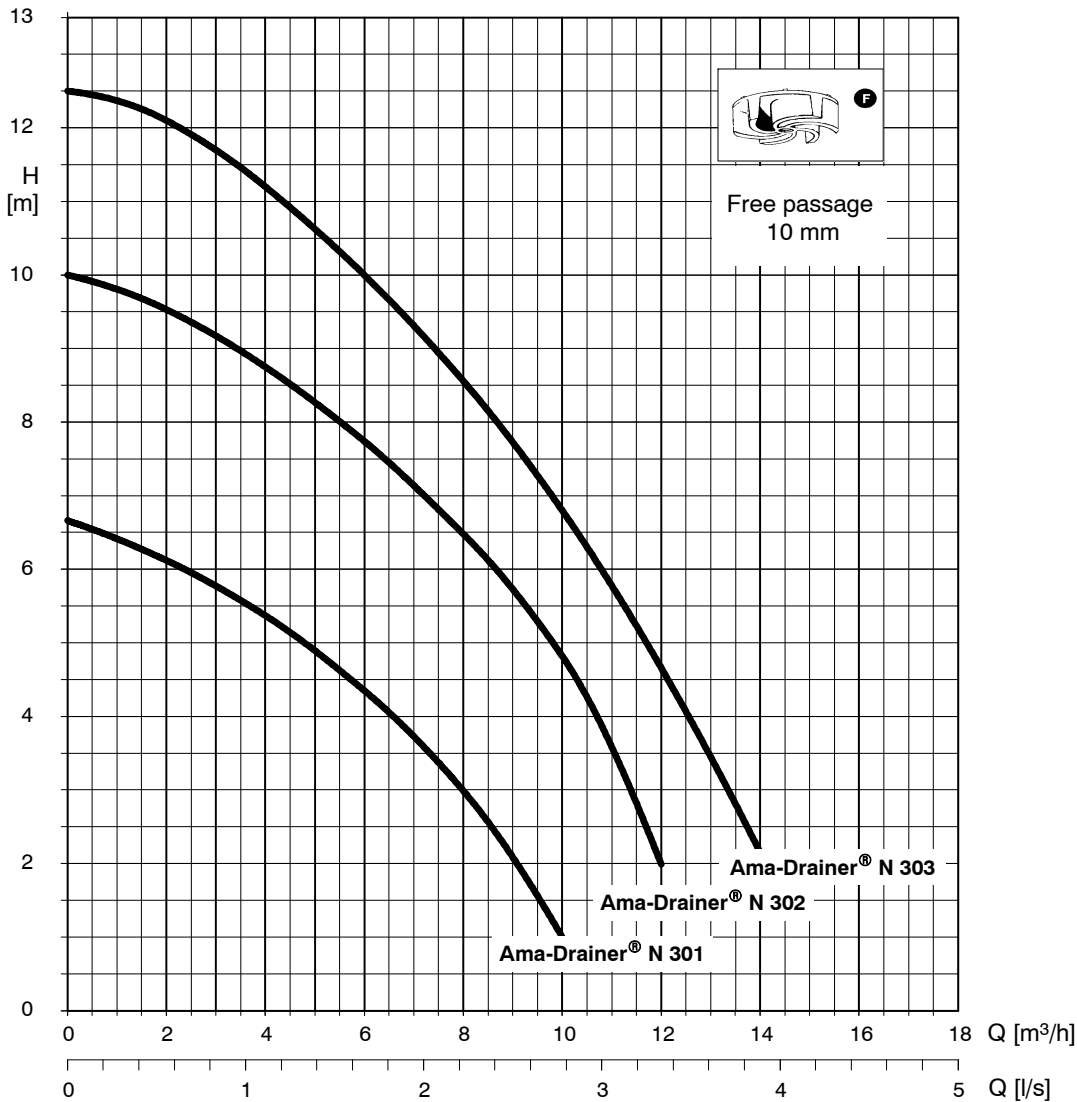
Drive

Jacket-cooled single-phase a.c. motor, with integrated temperature switch, cable and shockproof plug.

Materials

| Am-Drainera® N | Standard design | Design C |
|----------------------|---|----------|
| Pump casing | polypropylene, 30% glass fibre reinforced | |
| Discharge casing | polypropylene, 30% glass fibre reinforced | |
| Casing cover | Noryl GNF3 | |
| Impeller | Noryl GNF2 | |
| Motor housing | 1.4301 | 1.4571 |
| Shaft | 1.4028 | 1.4571 |
| Float switch (float) | polypropylene | |

CE - EN 12 050-2

Ama-Drainer® N 301, 302, 303
n = 3500 rpm


Performance tolerance to ISO 9906, Annex A
 (water under standard conditions)

Ama-Drainer® N - Standard design for waste water

| Ama-Drainer® N | ISO 7/l Rp | Particle size max. mm | P1 kW | P2 kW | 60 Hz 1 ~ 230V A | Mains connection H 07 RN8-F.G. m mm² | Ident. No. | Weight gross/net kg |
|----------------|------------|-----------------------|-------|-------|------------------|--------------------------------------|------------|---------------------|
| 301 SE | 1 1/4 | 10 | 0.500 | 0.210 | 2.15 | 3* 3 x 0.75 1) | 39300089 | 4.76 / 4.33 |
| 302 SE | 1 1/4 | 10 | 0.750 | 0.360 | 3.30 | 3* 3 x 0.75 1) | 39300092 | 6.29 / 5.81 |
| 303 SE | 1 1/4 | 10 | 1.120 | 0.600 | 5.00 | 3* 3 x 0.75 1) | 39300095 | 6.52 / 6.044 |
| 301 SE/NE | 1 1/4 | 10 | 0.500 | 0.210 | 2.15 | 10 3 x 1.0 | 39300090 | 5.64 / 5.21 |
| 302 SE/NE | 1 1/4 | 10 | 0.750 | 0.360 | 3.30 | 10 3 x 1.0 | 39300093 | 7.17 / 6.69 |
| 303 SE/NE | 1 1/4 | 10 | 1.120 | 0.600 | 5.00 | 10 3 x 1.0 | 39300096 | 7.40 / 6.92 |

Ama-Drainer® N C - Design for aggressive water

| | | | | | | | | |
|-------------|-------|----|-------|-------|------|------------|----------|-------------|
| 301 SE/NE/C | 1 1/4 | 10 | 0.500 | 0.210 | 2.15 | 10 3 x 1.0 | 39300091 | 5.64 / 5.21 |
| 302 SE/NE/C | 1 1/4 | 10 | 0.750 | 0.360 | 3.30 | 10 3 x 1.0 | 39300094 | 7.17 / 6.69 |
| 303 SE/NE/C | 1 1/4 | 10 | 1.120 | 0.600 | 5.00 | 10 3 x 1.0 | 39300097 | 7.40 / 6.92 |

1) Mains connection H05 RN8-F.G.

2) **Caution:** For external control systems or dual-pump stations, fit the supplied locking disc instead of the float switch.

*) In accordance with EN 60 335-2-41, submersible motor pumps which are used outdoors must be equipped with a 10 m power cable as a minimum.

Fluids (examples)

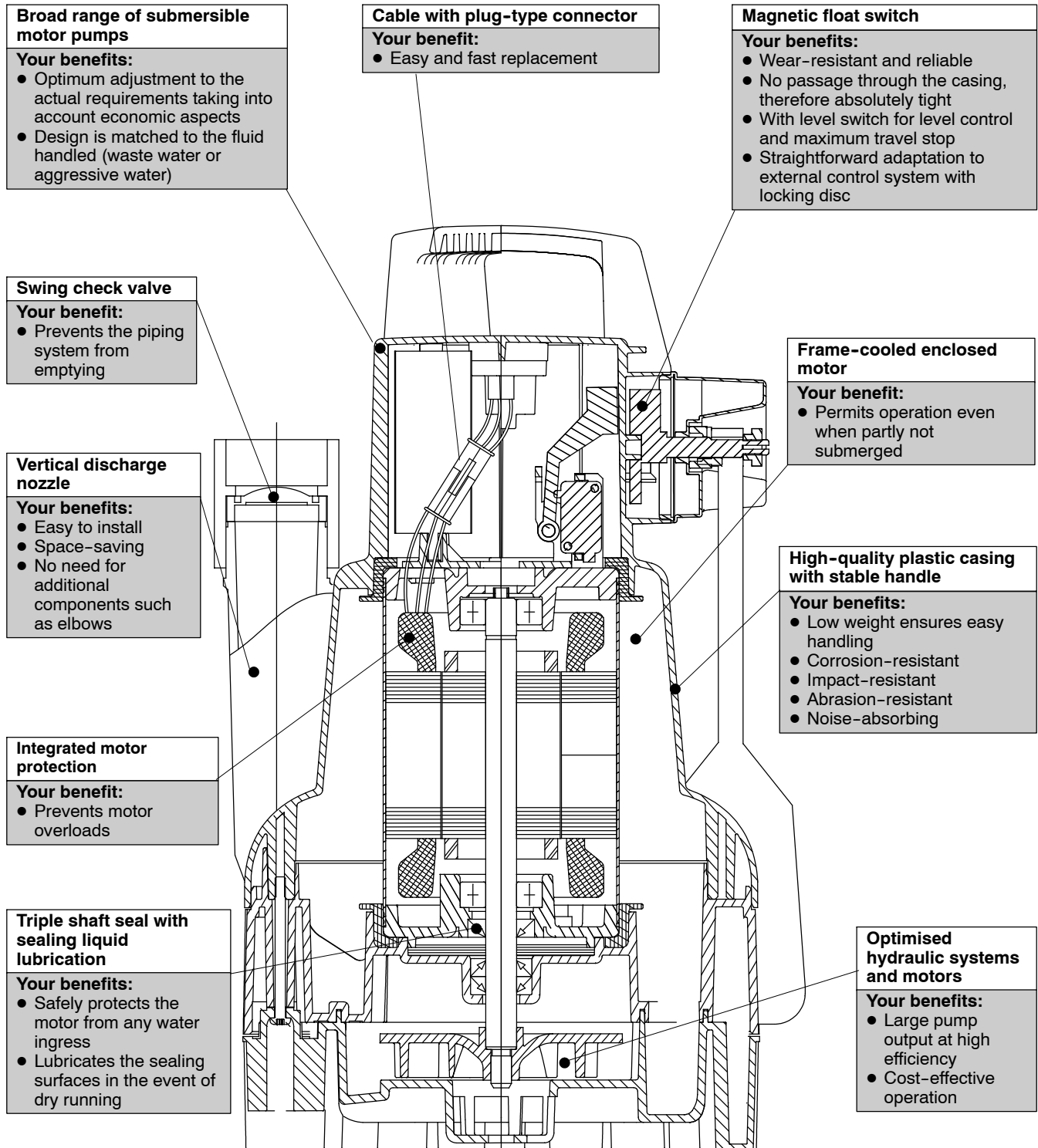
| Fluid handled | Ama-Drainer® N | |
|---|-----------------|----------|
| | Standard design | Design C |
| Antifreeze agent | x | |
| Antifrogen-water mixture | x | |
| Beer | x | |
| Buttermilk | x | |
| Calcium acetate | x | |
| Calcium hydroxide | x | |
| Castor oil | x | |
| Cider | x | |
| Coconut oil | x | |
| Corn oil | x | |
| Deionised water | x | |
| Edible vinegar | | x |
| Edible oil | x | |
| Ethylene glycol | x | |
| Evaporated milk | x | |
| Glycol | x | |
| Glycerine | x | |
| Grisiron® | x | |
| Lemonades | x | |
| Liquid fertiliser | x | |
| Milk | x | |
| Peanut oil | x | |
| Polyglycols | x | |
| Potassium hydroxide | x | |
| Potassium carbonate | x | |
| Rapeseed oil | x | |
| Silicon oil | x | |
| Silo leachate | | x |
| Sodium carbonate | x | |
| Sodium chloride up to 3 % concentration | | x |
| Sodium hydrogen phosphate | x | |

| Fluid handled | Ama-Drainer® N | |
|---------------------|-----------------|----------|
| | Standard design | Design C |
| Sodium nitrate | x | |
| Sodium perborate | x | |
| Sodium sulphate | x | |
| Soy-bean oil | x | |
| Spirits | x | |
| Trisodium phosphate | x | |
| Uric acid | x | |
| Vaseline | x | |
| Vinegar | | x |
| Washing machine lye | x | |
| Whey | x | |

Water:

| | | |
|--------------------------|---|---|
| Boiler water | x | |
| Condensate | x | |
| Cooling water | x | |
| Drainage water | x | |
| Fire-fighting water | x | |
| Fully desalinated water | | x |
| Heating water | x | |
| Lime water | | x |
| Partly desalinated water | x | |
| Pure water | x | |
| Raw water | x | |
| Salt water | | x |
| Sea water | | x |
| Swimming pool water | | x |

Product Features - to Our Customers' Benefit



Broad range of submersible motor pumps
Your benefits:

- Optimum adjustment to the actual requirements taking into account economic aspects
- Design is matched to the fluid handled (waste water or aggressive water)

Cable with plug-type connector
Your benefit:

- Easy and fast replacement

Magnetic float switch
Your benefits:

- Wear-resistant and reliable
- No passage through the casing, therefore absolutely tight
- With level switch for level control and maximum travel stop
- Straightforward adaptation to external control system with locking disc

Swing check valve
Your benefit:

- Prevents the piping system from emptying

Frame-cooled enclosed motor
Your benefit:

- Permits operation even when partly not submerged

Vertical discharge nozzle
Your benefits:

- Easy to install
- Space-saving
- No need for additional components such as elbows

High-quality plastic casing with stable handle
Your benefits:

- Low weight ensures easy handling
- Corrosion-resistant
- Impact-resistant
- Abrasion-resistant
- Noise-absorbing

Integrated motor protection
Your benefit:

- Prevents motor overloads

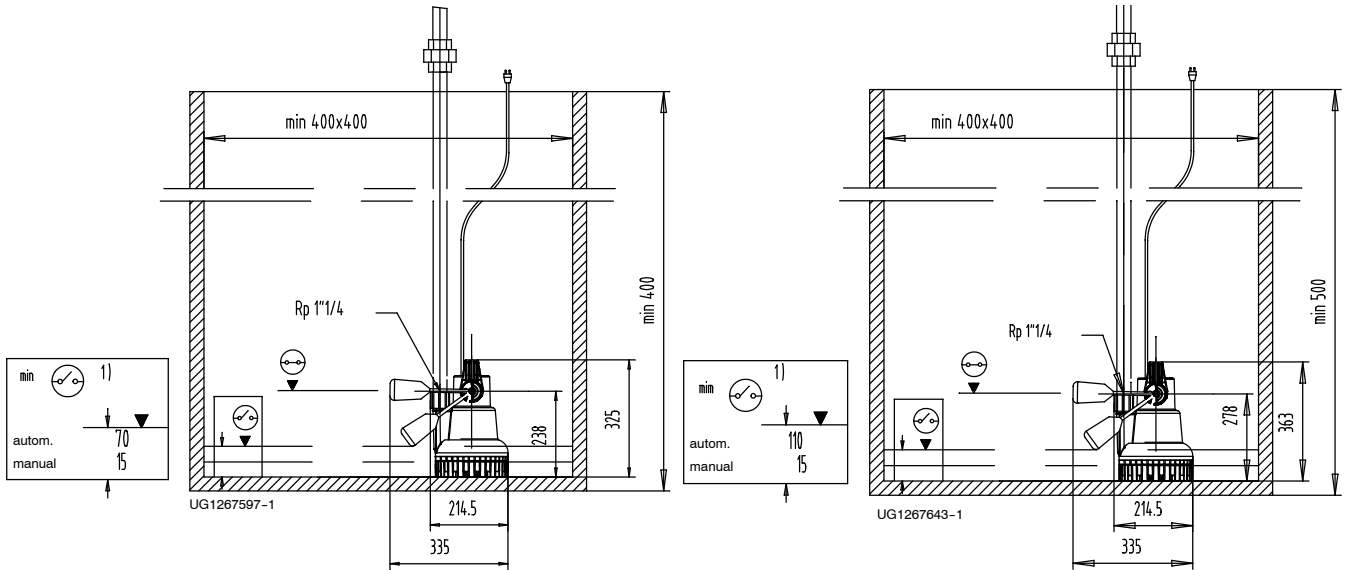
Triple shaft seal with sealing liquid lubrication
Your benefits:

- Safely protects the motor from any water ingress
- Lubricates the sealing surfaces in the event of dry running

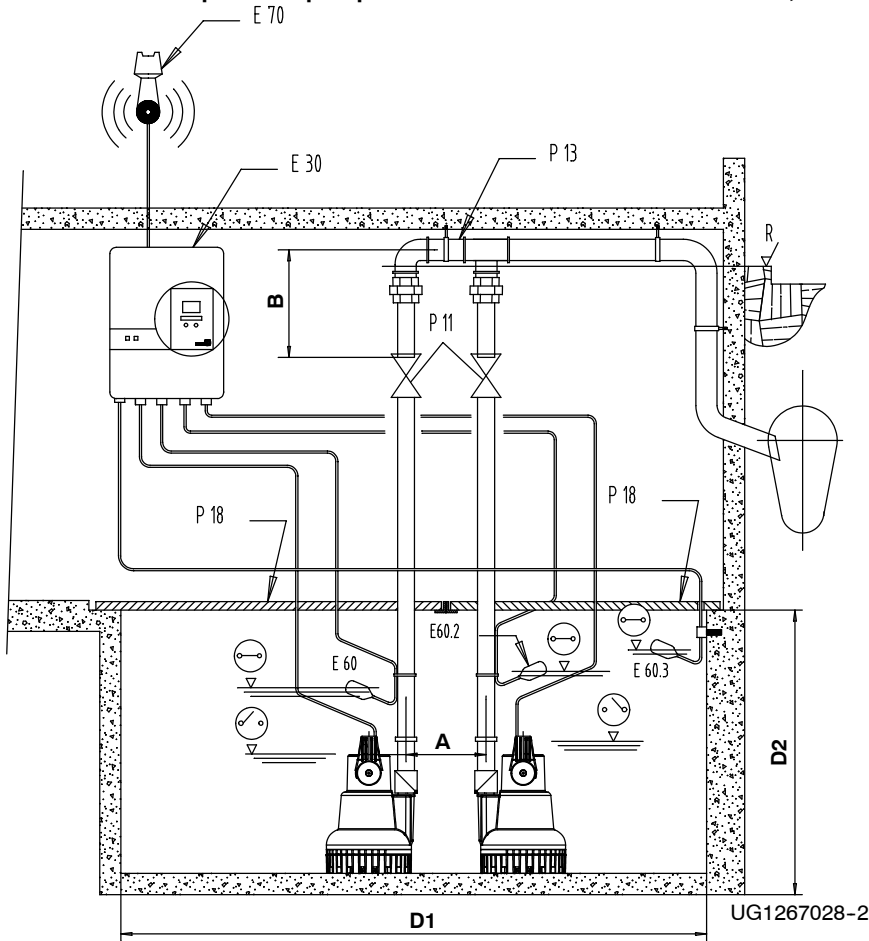
Optimised hydraulic systems and motors
Your benefits:

- Large pump output at high efficiency
- Cost-effective operation

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Dimensions/Suggested Installation Layouts
Ama-Drainer® N 301 SE
Ama-Drainer® N 302 SE/303 SE


1) Residual water level



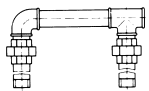
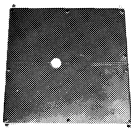
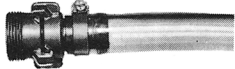




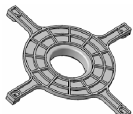
Installation example dual-pump station with Ama-Drainer® N 301 NE, 303 NE


- P 11 Gate valve
- P 13 Y-pipe
- P 18 Cover plate
- E 30 Switchgear
- E 60 Float switch "base load"
- E 60/2 Float switch "peak load"
- E 60/3 Float switch "high water alert"
- E 70 Horn
- R Flood level

mm

| Ama-Drainer N | A | B | D ₁ | D ₂ |
|---------------|-----|-----|----------------|----------------|
| 301 | 275 | 320 | 1060 (x 500) | 400 |
| 302-303 | 275 | 320 | 1060 (x 500) | 500 |




Pump Accessories

| | | | | Ama-Drainer® N | | Ident. No. | ≈kg | |
|------|---|---|--|----------------|------------|------------|------------|-----|
| | | | | 301 | 302 303 | | | |
| P 10 |  | RK swing check valve Plastic, PN 4, RK with internal/internal thread ISO 7/1 with full port and drain plug | Rp 1 1/4 / Rp 1 1/4 Rp 1 1/4 / Rp 1 1/4 | X | X | 01 009 771 | 0.9 | |
| P 11 |  | Socket gate valve, CuZn with internal/internal thread with full port, PN 16 | Rp 1 1/4 / Rp 1 1/4 | X | X | 01 014 219 | 0.5 | |
| P 13 |  | Y-pipe for dual pump sets, with external thread Galvanised steel | R 1 1/4 | X | X | 18 040 311 | 4.3 | |
| P 18 |  | Cover plate , tread-proof, steel, split with profile joint and angle iron mounting frame Form A 560 □ for 500 x 500 mm pits (Dual-pump stations with P13 Y-pipe are equipped with 2 cover plates next to each other.) | R 1 1/4 | X | X | 18 075 627 | 13.0 | |
| P 21 |  | A 25 B drain hose set consisting of: rigid coupling with external thread, 6 m plastic hose DN 25, rapid-action hose coupling 1 1/4 (free passage of 21 mm) | R 1 1/4 | X | X | 18 079 719 | 1.7 | |
| P 24 |  | Storz rigid coupling with internal thread to ISO 228/1 Aluminium alloy Required pipe components, see P 32 | C-G 1 1/2 | X | X | 01 002 463 | 0.3 | |
| P 26 |  | Storz hose coupling Aluminium alloy | DIN 14321 C 52 | (x) | (x) | 00 524 551 | 0.3 | |
| P 28 |  | Plastic hose DN 40 with integrated C couplings | DIN 14811 | C 42 5 m | X | X | 01 062 592 | 1.7 |
| | | | | C 42 10 m | X | X | 01 062 593 | 2.8 |
| | | | C 42 | 20 m | X | X | 01 062 594 | 5.0 |
| P 28 |  | Plastic hose DN 50 with integrated C couplings | DIN 14811 | C 52 5 m | (x) | (x) | 00 522 262 | 2.3 |
| | | | | C 52 10 m | (x) | (x) | 00 522 263 | 4.2 |
| | | | C 52 | 20 m | (x) | (x) | 00 522 264 | 5.7 |
| P 30 | | Ama-Drainer®-Box , automatic waste water lifting unit with plastic collecting tank and submersible motor pump See type series booklet 2331.55 | | | | | | |
| P 31 |  | Bellmouth for draining residual water (up to 5 mm) | | X | X | 39 300 101 | 0.2 | |
| P 32 | | Pipe extension for C (P 24) Storz rigid coupling, PVC hard, internal/external thread | Rp 1 1/4 / R 1 1/2 x 170 | X | X | 11 035 587 | 0.2 | |

X For standard nominal diameter

(x) For nominal diameters other than standard, see additional components P 32

Electrical Accessories

| | | Amperage min - max A | Ama-Drainer® N | | | Ident. No. | ≈kg | |
|------|--|--|---|-----|-----|------------|--|-------------------|
| | | | 301 | 302 | 303 | | | |
| E 1 |  <p>MSE motor protection switchgear, IP 54 for one pump with integrated motor protection relay, manual-0-automatic selector switch and motor contactor, indicator lamps for operation and fault.</p> <p>Dimensions (W x H x D) 100 x 170 x 112 mm</p> | 230 V~ Max. back-up fusing 6 A MSE 25.1 10 A MSE 40.1 10 A MSE 60.1 | 1.8 A - 2.6 A 2.6 A - 3.7 A 3.7 A - 5.5 A | X | X | X | 19 070 136 19 070 137 19 070 138 | 1.0 1.0 1.0 |
| E 10 |  <p>Control unit for single-pump station, IP 54 LevelControl Basic 2 D.o.I. starting with manual-0-automatic selector switch Indicator lamps and control panel High water alert Integrated alarm buzzer 85 dB(A) Operating hours counter/start-stop cycles per pump Voltage measurement, phase monitoring Volt-free contact for general fault message</p> <p>With external socket Optional mains-independent alarm via rechargeable battery Optional master switch 361 x 278 x 120 mm Float switch or sensor 4...20 mA</p> | 230 V~ BC1 230 DFNO 100 | up to 10 A | X | X | X | 19 073 760 | 3.0 |
| E 30 |  <p>Control unit for dual-pump station, IP 54 LevelControl Basic 2 Peak load operation D.o.I. starting with manual-0-automatic selector switch Indicator lamps and control panel High water alert Integrated alarm buzzer 85 dB(A) Operating hours counter/start-stop cycles per pump Voltage measurement, phase monitoring Volt-free contact for general fault message</p> <p>With external socket Optional mains-independent alarm via rechargeable battery Optional master switch 361 x 278 x 120 mm Float switch or sensor 4...20 mA</p> | 230 V~ BC2 230 DFNO 100 | up to 10 A | X | X | X | 19 073 774 | 3.0 |

Operation with mini control systems

- For Ama-Drainer® N 301 SE/NE, 302 SE/NE and 303 SE/NE with 10 m power cable, the supplied locking disc must be fitted instead of the float switch (see operating manual). Separate float switches are required for operation with mini control systems.

LevelControl with float switches:

Single pump: At least 1 float switch for pump On/Off
At least 2 float switches for pump On/Off and high water alert

Dual pump: At least 2 float switches for pump On/Off
At least 3 float switches for pump On/Off and high water alert

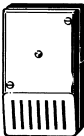


Dual pump operation with two level switches at different levels:

- Two pumps installed in the same installation location should be operated via the LevelControl unit. This control unit enables automatic alternating, peak load and stand-by operation. An external alarm switchgear will not be required as LevelControl features an integrated alarm function.

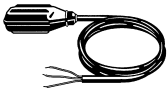

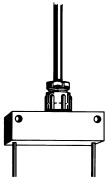


Connection to the control station

- With the exception of MSE, each control unit features a volt-free contact for transmitting the general fault message to the control station.

Alarm Switchgears

| | | | Ama-Drainer® N | | Ident. No. | ≈kg | |
|------|--|---|-----------------------------|------------|------------|------------|-----|
| | | | 301 | 302 303 | | | |
| |  | Alarm switchgear AS 0, AS 2, AS 4 with circuit breaker, piezoceramic signal transmitter, 85 dB(A) at a distance of 1 m and 4.1 kHz, green equipment-on lamp Plastic housing IP 20, 140 x 80 x 57 mm Use float switch (E 60) or moisture sensor F 1 (E 64) as contactor. | 230 V~/ 12 V = 1.2 VA | | | | |
| E 50 | | Mains-dependent | AS 0 | X | X | 29 128 401 | 0.5 |
| E 51 | | Mains-dependent with volt-free signalling contact | AS 2 | X | X | 29 128 422 | 0.5 |
| E 52 | | Mains-independent with volt-free signalling contact and self-charging power supply unit for 5 hours' operation in case of a mains failure | AS 4 | X | X | 29 128 442 | 1.2 |
| E 53 |  | Alarm switchgear AS 5, mains-independent, with self-charging power supply unit for 10 hours' operation in case of a mains failure, mains pilot LED, fault indicator light, horn-off push-button, volt-free contact for hook-up to a control station, ready to be plugged in, with 1.8 m cable and plug. ISO housing IP 41, 190 x 165 x 75 mm Use float switch (E 60) as contactor. | 230 V~/ 12 V = 5 VA | X | X | 00 530 561 | 1.7 |
| | | Horn see accessories | | | | | |
| E 55 |  | Alarm switchgear AS 1, in ISO plug housing IP 30, mains-independent, with self-charging power supply unit for 5 hours' operation in the event of a power failure, acoustic signal 70 dB(A) with circuit breaker and integrated signal transmitter with 3-metre connection cable, max. 60 °C, not suitable for steam and condensate. 2 possible applications for alarm transmission: 1) High-water alarm by suspending the moisture sensor in a (pump) sump above the pump start-up level. 2) Water alarm signal at a water level of only 1 mm (!) by placing the transmitter on the floor of rooms at risk of flood- ing, e.g. the cellar or next to the washing machine in the kitchen or bathroom. | 230 V~/ 9 V = 1.5 VA | X | X | 00 533 740 | 0.9 |

Accessories

| | | | | Ama-Drainer® N | | Ident. No. | ≈kg |
|------|---|---|-----------------------------|----------------|------------|------------|-----|
| | | | | 301 | 302 303 | | |
| E 60 |  | Float switch Switch housing made of polypropylene (max. fluid temperature 70 °C) with free cable end, (NO contact) Circuit closed in upper float position Connection cable (H 07 RN-F3G1) | 230 V AC or 3 m | X | X | 11 037 742 | 0.5 |
| | | | 24 V AC/24 V DC 5 m | X | X | 11 037 743 | 0.8 |
| | | | max. 8 A 10 m | X | X | 11 037 744 | 1.4 |
| | | | min. 20 mA 15 m | X | X | 11 037 745 | 1.8 |
| | | | 20 m | X | X | 11 037 746 | 2.6 |
| | | | 25 m | X | X | 11 037 747 | 2.9 |
| | | | 30 m | X | X | 11 037 748 | 3.4 |
| E 62 |  | with free cable end, (NC contact) 1) Circuit open in upper float position 20 m (H 07 RN-F3G1) | 5 m | X | X | 11 037 756 | 0.8 |
| | | | 10 m | X | X | 11 037 757 | 1.4 |
| | | | | X | X | 11 037 758 | 2.6 |
| E 64 |  | Moisture sensor F 1 as contactor for alarm switchgear AS 0, AS 2 or AS 4, with 3-metre connection cable, max. 40 °C, not suitable for steam and condensate. Possible applications for alarm transmission: 1) High-water alarm by suspending the moisture sensor in a (pump) sump above the pump start-up level. 2) Water alarm signal at a water level of only 1 mm (!) by placing the transmitter on the floor of rooms at risk of flooding, e.g. the cellar or next to the washing machine in the kitchen or bathroom. 52 x 21 x 20 mm | | X | X | 19 072 366 | 0.9 |
| E 70 |  | Horn suitable for indoor and outdoor installation, mount in a position where it is protected against direct rain, enclosure IP 33 | 12 V= 105 dB(A) 1.2 W | X | X | 01 086 547 | 0.1 |
| E 80 |  | STECKMAT safety switch 230 V~/ Fast shutdown in approx. 0.03 seconds even in the event of slight leakage current which does not pose a health hazard for human beings, from approx. 0.03 A | 10 A | X | X | 00 534 217 | 0.4 |
| E 90 | | Rechargeable battery retrofit kit for type BC, for powering the electronics, the float switches or internal pressure sensor and the alarm equipment (buzzer, horn, alarm combination), for single-pump and dual-pump stations (consisting of 2 rechargeable batteries 6 V, 1.3 Ah) | | X | X | 19 074 194 | 0.5 |

1) Only for dry running protection (LevelControl in operating mode "Tank filling")

LevelControl Basic 2

| Features | Single-pump station Float or input 4...20 mA | Dual-pump station Float or input 4...20 mA |
|---|--|--|
| o Optional x Control unit features | | |
| 230 V: 6.0 - 10 A | BC1 230 DFNO 100 | BC2 230 DFNO 100 |
| Functions | | |
| Drain tank | X | X |
| Tank filling via float switches | X | X |
| Stand-by pump: 1 pump redundant | - | X |
| Automatic pump changeover after every start | - | X |
| Automatic pump changeover in the case of a pump fault | - | X |
| Peak load operation | - | X |
| Runtime limitation | X | X |
| OFF via after-run time | X | X |
| OFF via level | X | X |
| Functional check run after idle period | X | X |
| Alert history | X | X |
| Display and operation | | |
| 7-segment display | X | X |
| Indication of water level | Switching levels | Switching levels |
| For each pump: operation/fault/pump running | Multicolour LED | Multicolour LED |
| General fault (traffic light) | LED | LED |
| Level High Water | LED | LED |
| Mains voltage | X | X |
| Mains frequency | - | - |
| Motor current per pump | - | - |
| Operating hours of each pump | X | X |
| Operating hours of the system | - | - |
| Starts per pump | X | X |
| Effective power per pump | - | - |
| Phase monitoring | X | X |
| Change of switching levels via control panel | X | X |
| Housing H x W x D, IP 54 | | |
| Plastic 361 x 278 x 120 | X | X |
| Sheet steel 600 x 400 x 155 | - | - |
| Sheet steel 600 x 400 x 200 | - | - |
| Built-in components | | |
| Master switch (lockable) | O | O |
| Manual-0-automatic selector switch for each pump | X | X |
| D.o.l. starting | X | X |
| Star-delta starting | - | - |
| Shockproof socket 230 V | X | X |
| Motor protection | | |
| Fuse per pump | X | X |
| Motor protection switch per pump (over-current and short-circuit protection) | - | - |
| Motor temperature warning input - self-acknowledging | X | X |
| Motor temperature alert input - manual acknowledgement | X | X |
| Pump | | |
| Thermal circuit breaker (TCB) / bimetal switch per pump | Bimetal switch in the motor | Bimetal switch in the motor |
| Installation options | | |
| Rechargeable battery for powering the electronics, sensors, alarm equipment | O | O |
| Alarm equipment | | |
| 1 free alarm input | X | X |
| 1 digital high water alert input (e.g. for float switch) | X | X |
| Volt-free contact (changeover contact) for general fault/operation message | X | X |
| Piezo buzzer 85 dB(A) | X | X |
| Horn/alarm combination/flashlight 12 V DC | O | O |
| Inputs / Outputs | | |
| Inputs for float switches / level switches | 4 | 4 |
| 4...20 mA analog input | X | X |
| Integrated pneumatic pressure sensor up to 3 metres of water - up to 10 metres on request | - | - |
| Bubbler system with compressor up to 2 metres of water | - | - |
| Remote acknowledgement | X | X |
| 12 V DC connection for horn, alarm combination, flashlight | X | X |
| Sensors | | |
| Float switch (NO contact) | O | O |
| F1 moisture sensor | O | O |
| Tools | | |
| KSB ServiceTool for Windows XP | O | O |

